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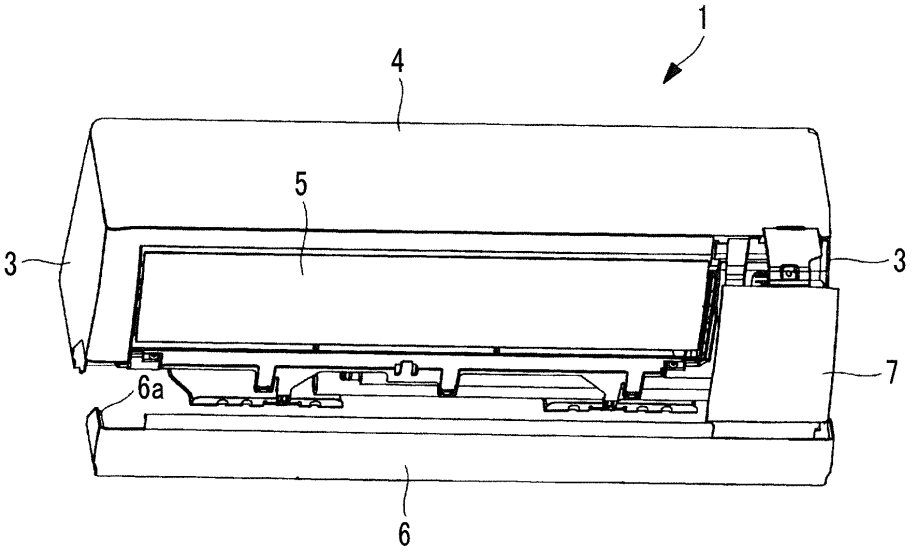
(54) **INDOOR UNIT FOR AIR CONDITIONING DEVICE**

(57) Provided is an indoor unit for an air conditioning device with which it is possible to minimize reductions in the rigidity of a front panel (3) even when the lower portion of an accessible opening is open to a terminal block. The present invention comprises: a terminal block in which a connection terminal of an electrical system is provided to a body; a front panel (3) positioned on the front-surface side of the body, the front panel (3) having an opening which is formed toward the front-surface side of the terminal block and of which one side is open; a cover part (7) for covering the opening, the cover part (7) being detachably provided to the front panel (3); and a bottom panel (6) for closing the one open side of the opening, the bottom panel (6) being detachably provided below the front panel (3).

FIG. 2



EP 3 521 726 A1

Description

Technical Field

[0001] The present invention relates to an indoor unit for an air conditioning device including an opening through which a terminal block can be accessed.

Background Art

[0002] An indoor unit for an air conditioning device includes a heat exchanger and a fan therein, and includes various types of panels covering the heat exchanger and the fan from the outside (for example, PTL 1).

Citation List

Patent Literature

[0003] [PTL 1] Japanese Unexamined Patent Application Publication No. 2012-112601

Summary of Invention

Technical Problem

[0004] A terminal block, in which a connection terminal of an electrical system is provided, is provided in the indoor unit for an air conditioning device. It is necessary to form an opening in a front panel at a position corresponding to the front side of the terminal block such that it is possible for an operator to access the terminal block. Then, by making the opening open to a downward direction, accessibility from the downward direction can be improved. However, when the opening is made open to the downward direction, the rigidity of the opening of the front panel decreases.

[0005] In view of such circumstances, an object of the present invention is to provide an indoor unit for an air conditioning device that can suppress a decrease in the rigidity of a front panel even in a case where an opening, through which a terminal block can be accessed, is open to a downward direction.

Solution to Problem

[0006] In order to solve the problem, the indoor unit for an air conditioning device of the present invention adopts the following means.

[0007] That is, according to an aspect of the present invention, there is provided an indoor unit for an air conditioning device including a terminal block that has a connection terminal of an electrical system provided in a main body, a front panel that is positioned on a front side of the main body and has an opening, which is formed on a front side of the terminal block and of which one side is open, and a cover portion that covers the opening and is detachably provided with respect to the front panel.

[0008] By providing the front panel having the opening on the front side of the terminal block, an operator can access the terminal block via the opening. In addition, since there is the opening of which the one side is open, it is easy for the operator to access the terminal block. Since the one side of the opening is open, the rigidity of the front panel decreases. Thus, by providing the cover portion covering the opening in the present invention, a decrease in the rigidity of the opening of the front panel can be suppressed. In addition, the operator can access the terminal block by removing the detachable cover portion.

[0009] For example, the opening of which the one side is open can be formed by providing two protruding portions, which extend from a base end portion to the one side in substantially parallel with each other, in a gate shape.

[0010] In the indoor unit for an air conditioning device according to the aspect of the present invention, a bottom panel that is detachably provided below the front panel and closes the one side of the opening is further included.

[0011] Since the bottom panel is detachably provided below the front panel, the operator can easily access from below the front panel by removing the bottom panel. In addition, since the bottom panel is provided to close the one side of the opening, the rigidity of the opening can be improved.

[0012] In the indoor unit for an air conditioning device according to the aspect of the present invention, a drain hose connection port is provided at a position where the bottom panel is removed from the front panel.

[0013] Since the drain hose connection port is provided at the position where the bottom panel is removed from the front panel, the operator can access the drain hose connection port by simply removing the bottom panel.

[0014] In the indoor unit for an air conditioning device according to the aspect of the present invention, the cover portion and the bottom panel are independent of each other and are detachably provided with respect to the front panel.

[0015] The cover portion and the bottom panel are independent of each other and are detachable from the front panel. Accordingly, it is not necessary for the operator to remove both of the cover portion and the bottom panel, and it is enough to remove the cover portion or the bottom panel according to operation content.

Advantageous Effects of Invention

[0016] Since the cover portion covering the opening is provided, a decrease in the rigidity of the opening of the front panel can be suppressed even in a case where the opening, through which the terminal block can be accessed, is open to the downward direction.

Brief Description of Drawings

[0017]

Fig. 1 is a perspective view illustrating an indoor unit for an air conditioning device according to an embodiment of the present invention.

Fig. 2 is a perspective view illustrating a state where a cover portion and a bottom panel are removed and separated from a front panel.

Fig. 3 is a perspective view illustrating a state where the cover portion and the bottom panel are removed from the front panel.

Fig. 4 illustrates a state where the cover portion is in the middle of being removed from the front panel, and is a partially enlarged perspective view of the cover portion seen from above.

Fig. 5 illustrates a state where the cover portion is in the middle of being removed from the front panel, and is a partially enlarged perspective view seen from an inside of the front panel.

Description of Embodiments

[0018] Hereinafter, an embodiment according to the present invention will be described with reference to the drawings.

[0019] Fig. 1 illustrates an appearance of an indoor unit 1 of an air conditioning device. The indoor unit 1 is a wall-hanging type, sucks indoor air from above, and blows air after air conditioning indoors from below. The indoor unit 1 is connected to an outdoor unit (not illustrated), receives supply of a refrigerant compressed by the outdoor unit, and adjusts indoor air so as to have a predetermined temperature by means of an indoor heat exchanger provided inside the indoor unit 1.

[0020] The indoor unit 1 includes a front panel 3 on a front side so as to cover a main body to which the indoor heat exchanger and a fan is attached. The front panel 3 is made of a resin, and is fixed to a base plate (not illustrated) which is fixed to an indoor wall surface. A decorative panel 4 is attached in front of the front panel 3.

[0021] Fig. 2 is a perspective view of the indoor unit 1 illustrated in Fig. 1, which is seen from diagonally below. As illustrated in Fig. 2, a flap 5 is provided below the decorative panel 4. Air after air conditioning blows by opening the flap 5.

[0022] A resin bottom panel 6 is provided below the flap 5. Although a state where the bottom panel 6 is removed from the front panel 3 is illustrated in Fig. 2, the bottom panel 6 is fixed to the front panel 3 in an assembled state illustrated in Fig. 1. The bottom panel 6 has the same width as the front panel 3, and claws 6a are provided in both side portions thereof. The bottom panel 6 is detachably attached to the front panel 3 by the claws 6a on both sides of the bottom panel 6 engaging with the front panel 3.

[0023] A resin cover portion 7 is provided on the right in a case where the indoor unit 1 is seen from the front as in Fig. 2. A lower end of the cover portion 7 is provided to match an upper end of the bottom panel 6. The cover portion 7 is provided to cover the front of a terminal block 8 (refer to Fig. 3) in which a connection terminal of an electrical system is provided. In a case where the terminal block 8 is provided on the left of the indoor unit 1, the cover portion 7 is provided on the left.

[0024] Fig. 3 illustrates a state where the bottom panel 6 and the cover portion 7 are removed from the front panel 3. As described above, the terminal block 8 is provided on the right of the indoor unit 1. A drain hose connection port 9 that is open to a downward direction is provided on the left of the terminal block 8. A drain hose (not illustrated) is connected to the drain hose connection port 9. Drain water condensed by the indoor heat exchanger in the indoor unit 1 is led to the drain hose connection port 9. The drain hose connection port 9 is easily accessed by removing the bottom panel 6 from the front panel 3.

[0025] The front panel 3 has an opening 10 on the front side of the terminal block 8. As enlarged and illustrated in Fig. 4, the opening 10 is formed between a first protruding portion 3a extending from a base end portion of the front panel 3 along a side portion of the front panel 3 and a second protruding portion 3b extending substantially parallel to the first protruding portion 3a at an interval. Therefore, the opening 10 is a window formed in a gate-shaped gap formed by the first protruding portion 3a and the second protruding portion 3b, and one side 10a thereof is open.

[0026] As illustrated in Figs. 4 and 5, the cover portion 7 is detachably attached to the front panel 3 so as to cover the opening 10. Specifically, a claw (not illustrated) provided on one end of the cover portion 7 is engaged with engaging grooves 3a1 and 3b1 provided in tip portions of the protruding portions 3a and 3b, and the cover portion 7 is rotated about the claw as a rotation center. A claw 7a provided on the other end of the cover portion 7 is fixed by engaging with an engaging groove (not illustrated) of the front panel 3. In this manner, the cover portion 7 is independent of the bottom panel 6 and is detachable from the front panel 3.

[0027] As illustrated in Fig. 2, the upper end of the bottom panel 6 is provided to match the lower end of the cover portion 7. Therefore, the one side 10a of the opening 10 is closed by the bottom panel 6 when the bottom panel 6 is attached to the front panel 3.

[0028] In the aforementioned indoor unit 1, the following operation effects can be achieved.

[0029] By providing the front panel 3 having the opening 10 on the front side of the terminal block 8, an operator can access the terminal block 8 via the opening 10. In addition, since there is the opening 10 of which the one side 10a is open, it is easy for the operator to access the terminal block 8. Since the one side 10a of the opening 10 is open, the rigidity of the front panel 3 decreases. On the other hand, since the cover portion 7 covering the opening 10 is provided, a decrease in the rigidity of the opening 10 of the front panel 3 can be suppressed. In addition, the operator can easily access the terminal block 8 by removing the detachable cover portion 7.

[0030] Since the bottom panel 6 is detachably provided below the front panel 3, the operator can easily access from below the front panel 3 by removing the bottom panel 6. In addition, since the bottom panel 6 is provided to close the one side 10a of the opening 10, the rigidity of the opening 10 can be improved.

[0031] Since the drain hose connection port 9 is provided at a position where the bottom panel 6 is removed from the front panel 3, the operator can access the drain hose connection port 9 by simply removing the bottom panel 6.

[0032] The cover portion 7 and the bottom panel 6 are independent of each other and are detachable from the front panel 3. Accordingly, it is not necessary for the operator to remove both of the cover portion 7 and the bottom panel 6, and it is enough to remove the cover portion 7 or the bottom panel 6 according to operation content.

Reference Signs List

[0033]

1:	indoor unit
3:	front panel
3a:	first protruding portion
3a1:	engaging groove
3b:	second protruding portion
3b1:	engaging groove
4:	decorative panel
5:	flap
6:	bottom panel
6a:	claw
7:	cover portion
7a:	claw
8:	terminal block
9:	drain hose connection port
10:	opening
10a	one side

Claims

1. An indoor unit for an air conditioning device comprising:

a terminal block that has a connection terminal of an electrical system provided in a main body;
a front panel that is positioned on a front side of the main body and has an opening, which is formed on a front side of the terminal block and of which one side is open; and
a cover portion that covers the opening and is detachably provided with respect to the front panel.

2. The indoor unit for an air conditioning device according to Claim 1, further comprising:
a bottom panel that is detachably provided below the front panel and closes the one side of the opening.

3. The indoor unit for an air conditioning device according to Claim 2,
wherein a drain hose connection port is provided at a position where the bottom panel is removed from the front panel.

4. The indoor unit for an air conditioning device according to Claim 2 or 3,
wherein the cover portion and the bottom panel are independent of each other and are detachably provided with respect to the front panel.

Amended claims under Art. 19.1 PCT

1. (Amended) An indoor unit for an air conditioning device comprising:

a terminal block that has a connection terminal of an electrical system provided in a main body;
a front panel that is positioned on a front side of the main body and has an opening, which is formed on a front side of the terminal block and of which one side is open; and
a cover portion that covers the opening and is detachably provided with respect to the front panel,
wherein the opening of which the one side is open is formed between two protruding portions extending from a base end portion of the front panel to the one side in parallel with each other, and
the cover portion is engaged with a tip portion of each of the protruding portions.

2. The indoor unit for an air conditioning device according to Claim 1, further comprising:
a bottom panel that is detachably provided below the front panel and closes the one side of the opening.

3. The indoor unit for an air conditioning device according to Claim 2,
wherein a drain hose connection port is provided at a position where the bottom panel is removed from the front panel.

4. The indoor unit for an air conditioning device according to Claim 2 or 3,
wherein the cover portion and the bottom panel are independent of each other and are detachably provided with respect to the front panel.

FIG. 1

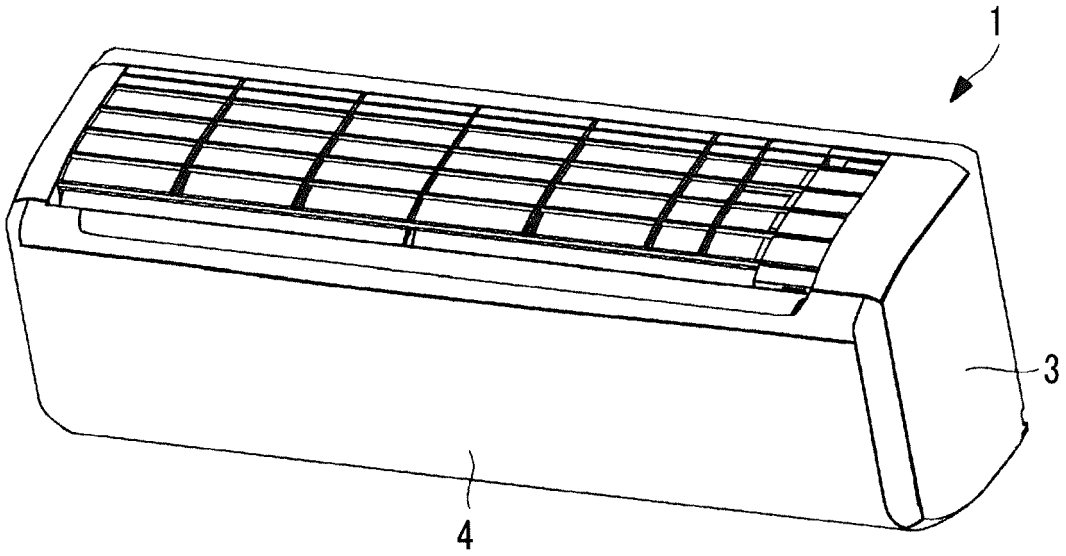


FIG. 2

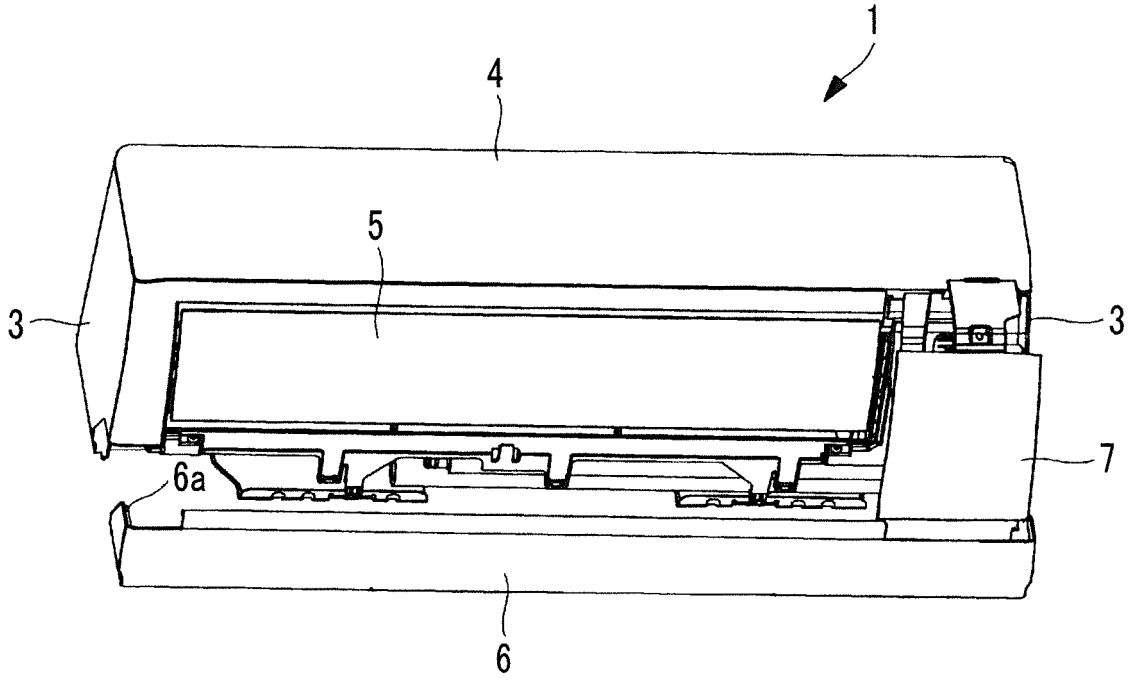


FIG. 3

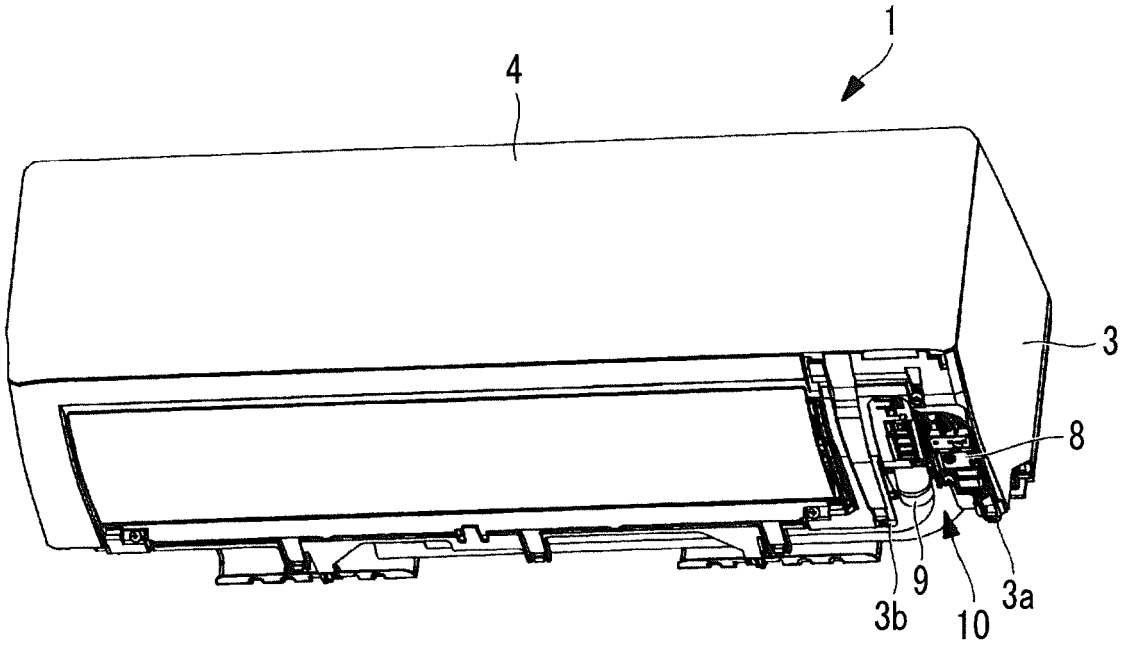


FIG. 4

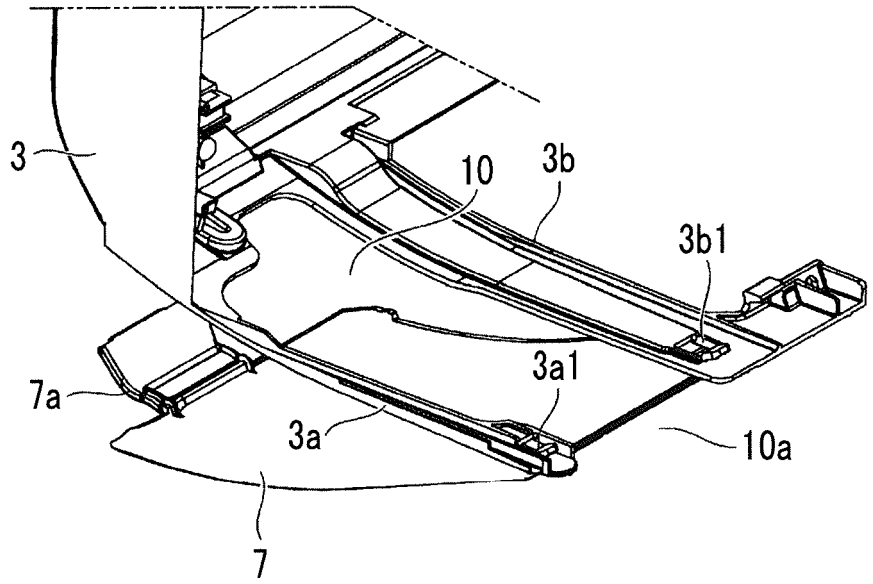
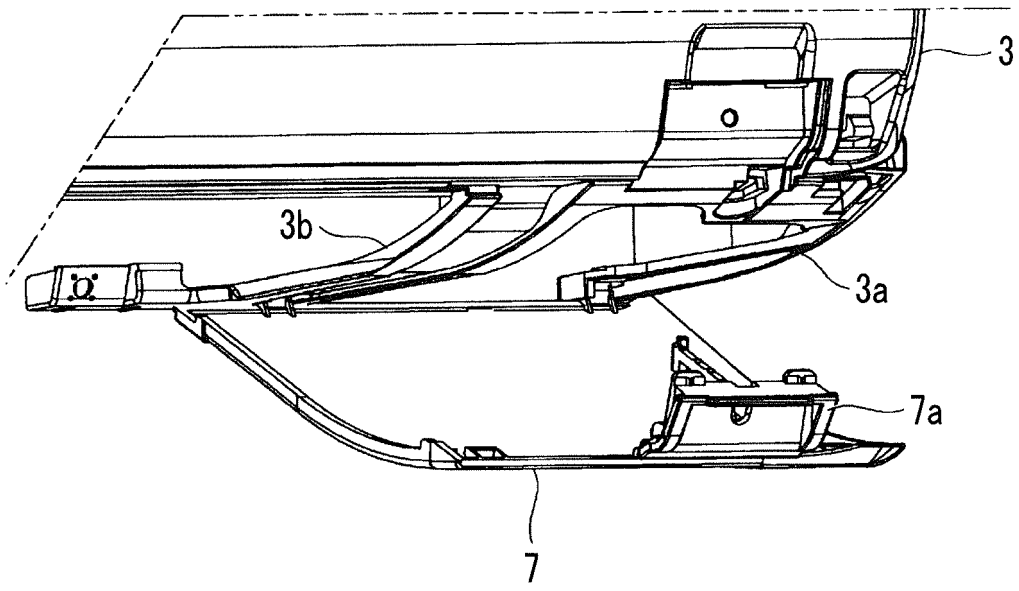


FIG. 5



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2018/009331

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl. F24F13/20(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int.Cl. F24F13/20

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Published examined utility model applications of Japan	1922-1996
Published unexamined utility model applications of Japan	1971-2018
Registered utility model specifications of Japan	1996-2018
Published registered utility model applications of Japan	1994-2018

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 10-115436 A (FUJITSU GENERAL LIMITED) 06 May 1998, paragraphs [0010]-[0019], fig. 1, 2 (Family: none)	1-4
Y	JP 10-61974 A (FUJITSU GENERAL LIMITED) 06 March 1998, paragraphs [0002], [0003], fig. 3 (Family: none)	1-4
Y	JP 2008-232554 A (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.) 02 October 2008, paragraphs [0015]-[0030], fig. 1-5 (Family: none)	1-4

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
25.05.2018	05.06.2018

Name and mailing address of the ISA/	Authorized officer
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International application No.
PCT/JP2018/009331

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2015-10731 A (PANASONIC CORPORATION) 19 January 2015, paragraphs [0023], [0025], [0033] (Family: none)	3-4
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 103473/1982 (Laid-open No. 7321/1984) (DAIKIN INDUSTRIES, LTD.) 18 January 1984, specification, page 4, line 12 to page 10, line 16, fig. 1-4 (Family: none)	3-4
A	JP 2016-211816 A (JOHNSON CONTROLS HITACHI AIR CONDITIONING TECHNOLOGY (HONGKONG) LTD.) 15 December 2016, paragraphs [0011]-[0059], fig. 1-7 (Family: none)	1-4

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2012112601 A **[0003]**